

Name: _____

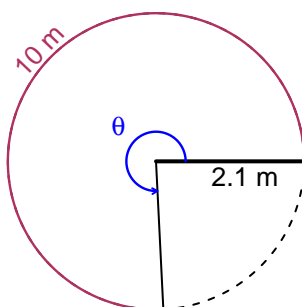
Date: _____

Trig Final (TEST v695)

- You can use a calculator (like [Desmos](#))
- You should have a unit-circle with special angles and coordinates marked.

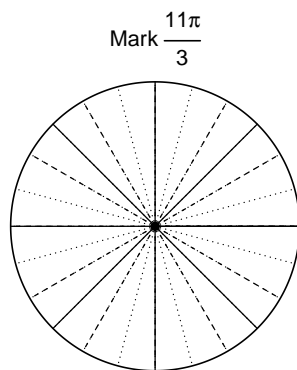
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 10 meters. The radius is 2.1 meters. What is the angle measure in radians?

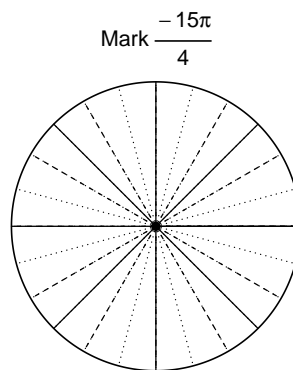


Question 2

Consider angles $\frac{11\pi}{3}$ and $-\frac{15\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{11\pi}{3}\right)$ and $\cos\left(-\frac{15\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\sin(11\pi/3)$



Find $\cos(-15\pi/4)$

Question 3

If $\tan(\theta) = \frac{-60}{11}$, and θ is in quadrant IV, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 8.26 meters, a frequency of 4.59 Hz, and a midline at $y = -5.6$ meters. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).